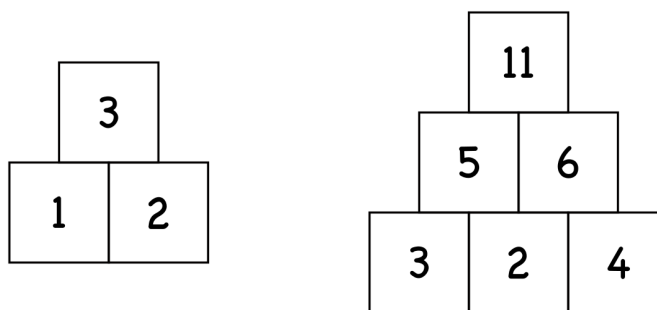


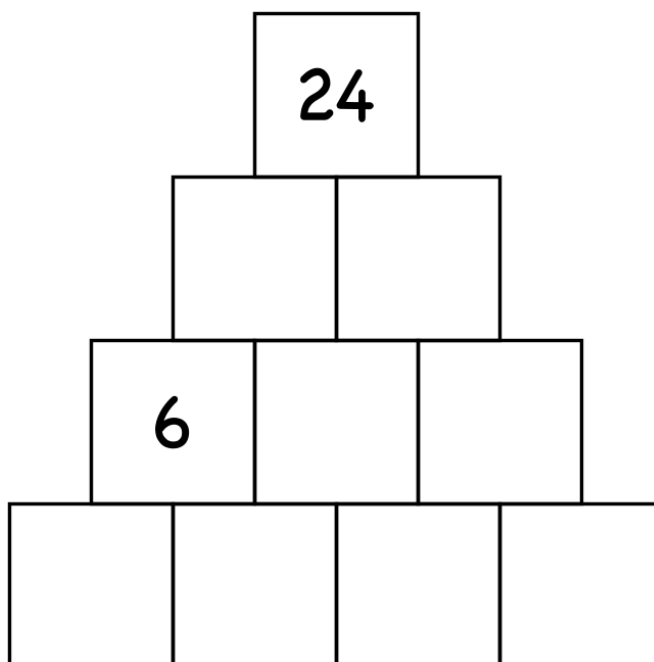
Puzzle of the Week

Sum Pyramids – 4

These pyramids are called *Sum Pyramids*. The number above each pair of connected numbers is their sum.



THE CHALLENGE: Place some of the numbers from 1 to 24, not repeating any number, to complete this Sum Pyramid. Can you find more than one solution?



Puzzle of the Week

Sum Pyramids – 4 – Notes

THE CHALLENGE: The puzzle is completely determined by its bottom row.

Tracing numbers up, we have two immediate constraints on the bottom row. The leftmost two numbers on the bottom row must add up to 6, so they are 1 + 5 or 2 + 4. Also, three times the sum of the two middle numbers, plus the sum of the two corner numbers, must be 24.

There are four possible contributions from the left side of the bottom row. In each case, we see the right side will contribute the remainder using 3 times its central number plus 1 times its corner number.

Case 1: (1 5) which contributes $1 + 3 \times 5 = 16$. We need 8 more from the right side. That cannot be done without duplicating numbers.

Case 2: (5 1) which contributes $5 + 3 \times 1 = 8$. We need 16 more from the right side. This can work with (3 7) or (2 10). If the bottom is (5 1 3 7), there is a duplication. If the bottom is (5 1 2 10), it works!

Case 3: (2 4) which contributes $2 + 3 \times 4 = 14$. We need 10 more from the right side. This can work with (3 1) or (1 7). If the bottom is (2 4 3 1), there is a duplication. If the bottom is (2 4 1 7), it works!

Case 4: (4 2) which contributes $4 + 3 \times 2 = 10$. We need 14 more from the right side. This can work with (3 5) or (1 11). If the bottom is (4 2 3 5), there is a duplication. If the bottom is (4 2 1 11), it works!

Putting this together, there are the three solutions:

(24)
(9 15)
(6 3 12)
(5 1 2 10)

or

(24)
(11 13)
(6 5 8)
(2 4 1 7)

or

(24)
(9 15)
(6 3 12)
(4 2 1 11)